

MATHEMATICAL CHALLENGE 2016–2017

Entries must be the unaided efforts of individual pupils.

Solutions must include explanations and answers without explanation will be given no credit.

Do not feel that you must hand in answers to all the questions.

CURRENT AND RECENT SPONSORS OF MATHEMATICAL CHALLENGE ARE

The Edinburgh Mathematical Society, The Maxwell Foundation, Professor L E Fraenkel,

The London Mathematical Society and The Scottish International Education Trust.

The Scottish Mathematical Council is indebted to the above for their generous support and gratefully acknowledges financial and other assistance from schools, universities and education authorities.

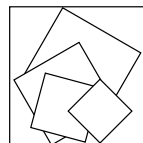
Particular thanks are due to the Universities of Aberdeen, Edinburgh, Glasgow, Heriot Watt, St Andrews, Stirling, Strathclyde and to Bearsden Academy, Kelvinside Academy and Northfield Academy.

Primary Division: Problems I

- P1.1.** A school has fewer than 200 pupils.
When they line up in rows of 4 there is 1 extra pupil.
When they line up in rows of 5 there are 2 extra pupils.
When they line up in rows of 6 there are 3 extra pupils.

How many pupils could there be in the school?

- P1.2.** Professor A. M. Nesia has a safe with a combination lock. In her journal, the note she uses to help her remember is this diagram →



and the year of her birth, 1941,

This reminds her that the code is a sequence of five perfect squares (square numbers) in ascending order where the mean = 19, median = 4 and mode = 1.

Find the combination.

- P1.3.** Fiona and Peter enjoy playing the game Snakes and Ladders.
In one game they noticed that after they had both thrown twice they were both at the foot of the same ladder which took them to square 53.

After two more throws each, they both arrived at the head of a snake and moved down to square 4.

Each time, they threw completely different numbers. The total of the first two throws was 4 more than the total of the second two throws. Also, in the four throws, Fiona did not roll the same number more than once and neither did Peter.

Which numbered square was at the foot of the ladder and which square was at the top of the snake?

END OF PROBLEM SET I

CLOSING DATE FOR RECEIPT OF SOLUTIONS :

30 September 2016

Look out for Problems II in October!

Look on the SMC web site: www.scot-maths.co.uk for information about Mathematical Challenge.



Mathematical Challenge Problems I

PRIMARY DIVISION

2016-2017

PLEASE USE CAPITALS TO COMPLETE

SURNAME

OTHER NAME(S)
(underline the one
you prefer)

SCHOOL

AGE

YEAR OF STUDY

P

FOR OFFICIAL USE

Marker

Marks

1	2	3	Total

— — — — - C U T A L O N G H E R E — — — —

Please write your solutions on A4 paper and staple the above form to them.

PLEASE WRITE YOUR NAME ON EVERY PAGE.

Send your entry through your school to the organiser of the section.

For further information on the competition, please see the Information Circular, which has been distributed to all primary schools. Please contact the local organiser, whose name and address are given above, or go to the web site if you require a further copy.
